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Section 11

Uintah Basin Plan

Utah State Water Plan

Drinking Water

Constant vigilance is required to assure high quality drinking water will always be available for a growing population.

11.1 Introduction

This section discusses public and private water supplies in the basin and reviews their present status. A public water system as defined by the Utah Division of Drinking Water (DDW) is one serving at least 15 connections or 25 people 60 days per year. Water from public systems is used for culinary, lawn and garden, car washing and many other uses. Industrial firms use water from public water systems also. Section 18 deals specifically with this use.

11.2 Setting

Municipal and industrial water use from community water systems in the Uintah Basin in 1995 was an average 276 gallons per capita per day (gpcd). This number included only potable water and does not include secondary water. The statewide average was 268 gallons gpcd in 1998. Use in counties varied from 223 gpcd in Duchesne, 366 gpcd in Daggett, and 240 gpcd in Uintah. Most of the variability among counties can be attributed to the amount of culinary water used for outside lawn and garden irrigation, and the number of tourists from outside the area, especially in Manila where Flaming Gorge Reservoir is located. Figure 11-1 shows water use in the Uintah Basin. Daggett County is high in use due to gallons per capacity per day consumed by summer tourists.



Head of the Uinta River

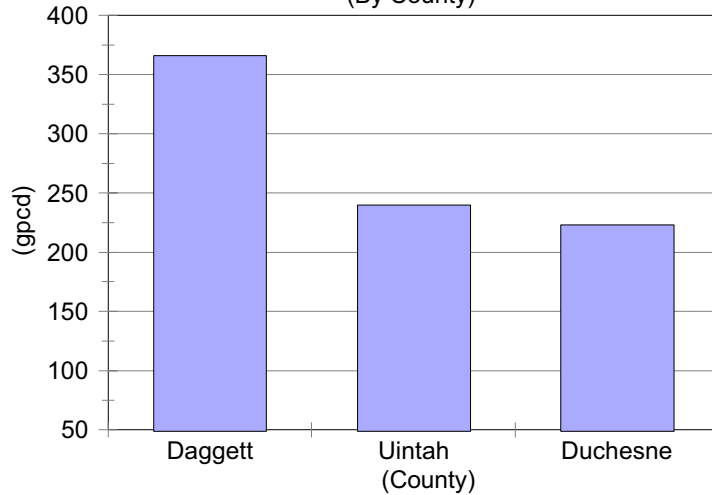
11.3 Organizations and Regulations

All public drinking water supplies are subject to the *State of Utah Administrative Rules for Public Drinking Water Systems* (R309-200 through R309-211). The Utah Department of Environmental Quality, Division of Drinking Water, administers the rules. In addition, the Division of Water Rights and the Board of Health have responsibility for approving how drinking water wells are constructed.

11.3.1 Local

Towns and cities have primary responsibility for drinking water quality control within their respective jurisdictions. Under state drinking water rules, public water facilities are categorized as: 1) community, 2) non-transient non-community, or 3) transient non-community water systems. The

Figure 11-1
Water Use in Uintah Basin
 (By County)



due to the excess cost of installing water systems to their areas. The Utah Division of Drinking Water (DDW) also regulates such water haulers (R309-211-10).

All public water systems in the basin have their own drinking water sources, but many receive additional water from districts such as the Central Utah Water Conservancy District and the Uintah Water Conservancy District. In the case of Vernal City, about 3,000 acre-feet per year of water is processed by Ashley Valley Water Treatment Plant (AVWTP). A new aqueduct (Tyzack Aqueduct Reach 3) will enable Maeser, Jensen and Ashley Valley to receive water from the Central Utah Water Treatment Plant.

Duchesne City uses water from Starvation Reservoir. A water treatment plant is situated adjacent to Starvation Dam and produces about 1,500 acre-feet per year (2.5 mgd) of water for municipal and industrial (M&I) use in Duchesne and vicinity. Manila receives about 280 acre-feet per year of Long Park Reservoir water from Sheep Creek Irrigation Company. Public community system boundaries are shown on Figure 11-2.

Division of Drinking Water designates each as approved or not approved on the basis of compliance with state drinking water rules. The basin has 28 approved public drinking water systems, shown in Table 11-1.

Table 11-1
Public Drinking Water System Ratings

Rating	Daggett	Duchesne	Uintah	Total
Approved	6	13	9	28
Not Approved	0	0	0	0
Corrective Action	0	0	0	0
Totals	6	13	9	28

Community water systems are public water systems serving at least 15 service connections used by year-round residents. Service is typically water distribution but may also include water treatment. Non-community systems provide seasonal water service to non-transient non-residents (e.g., school children, church congregations, etc.) or to transient non-residents (e.g., tourists, restaurant patrons, etc.). Non-community systems are usually owned and operated by small public organizations, although some exist to provide commercial and industrial drinking water. Some isolated farms and ranches still transport their drinking water in water trucks,

11.3.2 State

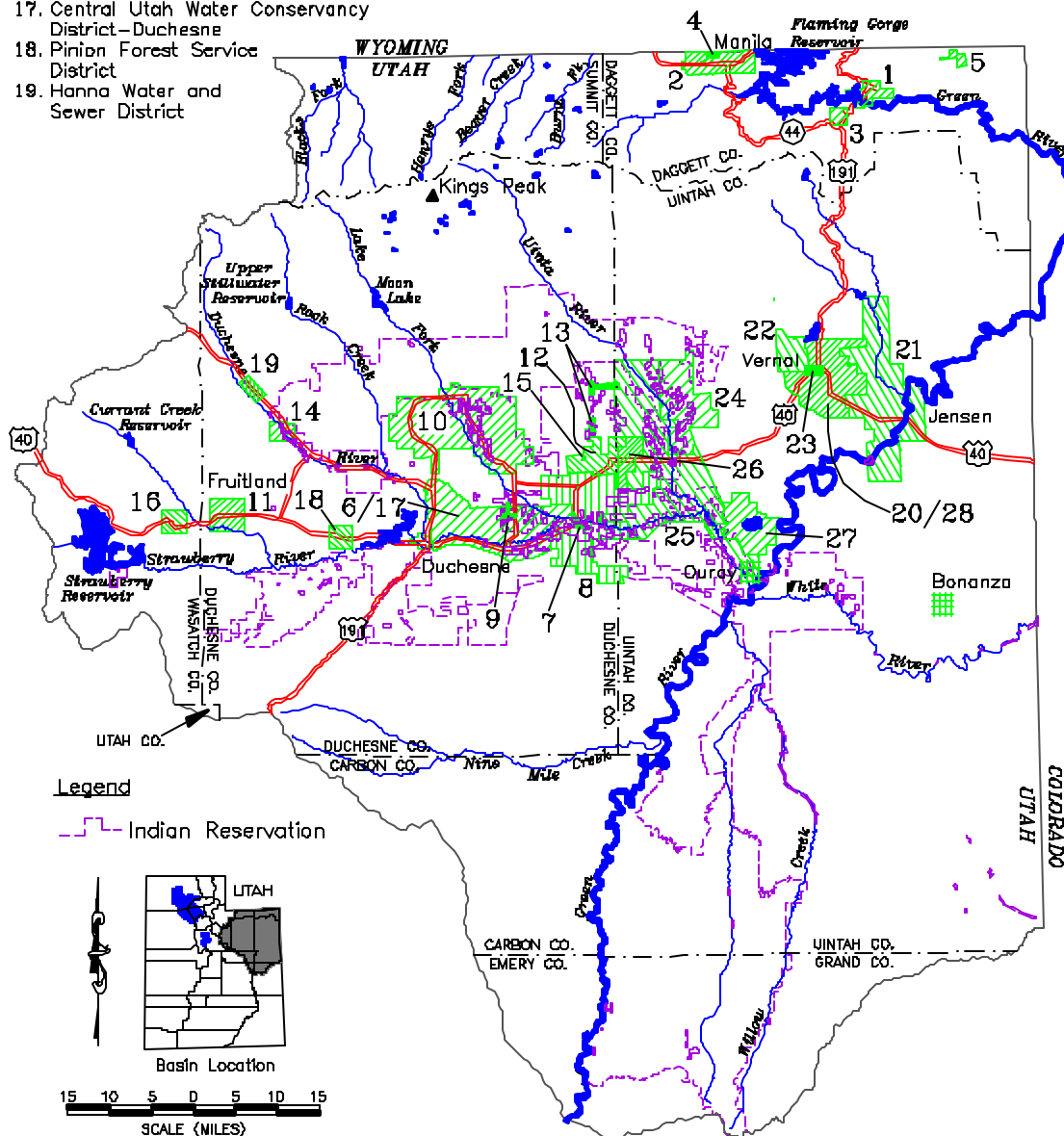
Verification that a public water system is complying with state rules and federal regulations is made through monitoring programs established by state and federal authorities. The *Utah Administrative Rules for Public Drinking Water Systems* (R309-200 through R309-211) outlines the procedures local facility operators must follow when taking water samples. The rules also outline the documentation requirements of subsequent water quality analyses for submission to the DDW and the state's responsibility to administer programs designed to monitor existing drinking water quality. Monitoring is testing and analyzing water samples. The rules also set contaminant levels of various water impurities and provide a protocol for application to the state for funds to design, construct and operate drinking water treatment and distribution facilities.

- DAGGETT COUNTY
1. Dutch John (Bureau of Reclamation)
 2. Daggett County Water & Sewer
 3. Greendale Water Company
 4. Manila Municipal Water System
 5. Clay Basin Camp (Questar Pipeline Company)

- DUCHESNE COUNTY
6. Duchesne Water System
 7. Myton Municipal Water System
 8. Johnson Water District
 9. East Duchesne Improvement District
 10. Duchesne County Upper Country WID
 11. Fruitland Water Special Service District
 12. Roosevelt Municipal Water Systems
 13. Neola Water District
 14. Tabiona Water System
 15. Valley Park Trailer Court
 16. Fruitland Homeowners
 17. Central Utah Water Conservancy District-Duchesne
 18. Pinion Forest Service District
 19. Hanna Water and Sewer District

Figure 11-2
PUBLIC COMMUNITY SYSTEM BOUNDARIES
Uintah Basin

- UINTAH COUNTY
20. Ashley Valley Water & Sewer Impr. District
 21. Jensen Water Improvement District
 22. Maeser Water Improvement District
 23. Vernal Municipal Water System
 24. Tridell-Lapoint Water Improvement District
 25. Ute Indian Tribe Water System
 26. Ballard Water Improvement District
 27. Ouray Park Water Improvement District
 28. Central Utah Water Conservancy District-Ashley



In an extreme emergency where danger to public health is imminent, the scope and nature of the threat must be reported to the DDW. Upon receiving a report of a significant decline in the quality of a public water supply, the division will direct necessary action to immediately eliminate the initial and ongoing cause of the problem. System operating policies are then revised to prevent similar problems from occurring in the future.

The Utah Safe Drinking Water Act (USDWA) created the Utah Drinking Water Board. The act has the power to regulate and protect the quality of Utah's drinking water. The USDWA authorizes rules designed to: 1) establish standards for drinking water quality; 2) establish standards and regulations for the design and construction of new and expanded water treatment and conveyance facilities; 3) protect watersheds and other sources of raw public water supplies; 4) provide technical and financial assistance to train operators, construct new treatment and distribution facilities and renovate existing ones; 5) administer federal programs that provide technical and financial assistance to local water agencies; 6) carry out emergency plans when natural disasters contaminate public drinking water supplies; and 7) provide enforcement of state and federal drinking water regulations.

State safe drinking water rules at a minimum reflect the same standards as federal regulations. State rules can be more stringent than federal regulations where the Board and Division of Drinking Water find federal regulations do not adequately protect the health of people in a certain area.

Maximum contaminant levels (MCLs) have been established by the DDW in setting treatment standards. MCLs have been established to protect primary and secondary standards and trigger treatment processes when the MCLs are exceeded. Primary standards apply to water constituents to protect public health and safety, while secondary standards apply to the water constituents of an aesthetic nature such as taste and odor. Federal secondary constituents' standards for some contaminants (e.g., sulfate, total dissolved solids) are deemed so important that they are regulated as primary standards under USDWA. State primary standards must be followed by all public drinking

water systems. State secondary standards, however, are only recommended to water systems and a means to ensure consumer satisfaction with delivered water quality.

The DDW also administers and promotes other programs. Funding is provided from a state revolving fund to construct new treatment and distribution facilities or upgrade existing facilities. Construction funds are awarded in four ways: 1) low interest loans, 2) direct grants, 3) interest buy-downs and 4) credit enhancements.

A Drinking Water Source Protection Plan is required of all water systems for submission to the DDW for general review and assessment of compliance with state drinking water rules.

11.3.3 Federal

With passage of the federal Safe Drinking Water Act (SDWA) in 1974, the federal government established national drinking water regulations to protect the public health from waterborne diseases. Congress expanded and strengthened the SDWA in 1986. The amended SDWA significantly increased the responsibility of the Environmental Protection Agency (EPA) to: 1) establish maximum levels of contamination for established pollutants, 2) set deadlines for owners/operators of treatment facilities to comply with federal regulations, 3) regulate lead and copper source protection and 4) strengthen enforcement of all regulations in the act. Chemical, physical, radiological and bacteriological substances in drinking waters that pose a health risk to the public are regulated by the EPA under provisions in the SDWA. The EPA has established MCLs for drinking water. An extensive list of MCLs has been established for the most common inorganic and organic contaminants. In addition, the SDWA established a strict schedule for the EPA to set MCLs for additional contaminants. As a result, additional contaminants are regularly identified and subjected to new state-established regulations.

To control the aesthetic quality of drinking water supplies, the SDWA establishes a list of secondary maximum contamination levels (SMCLs). SMCLs were established to ensure compliance with taste, odor and color standards.

The SDWA also requires state and local water providers monitor a specified list of regulated and

unregulated contaminants. Selection of contaminants is dependent on the number of people served, the water supply source and the contaminants likely to be found. The standardized monitoring framework is administered over three, three-year compliance cycles, for a nine-year total monitoring period, beginning in 1992. Completion of the first nine-year monitoring period will be followed by a second nine-year period.

The 1986 SDWA amendments also require all states to develop wellhead protection programs. The DDW has created the Drinking Water Source Protection Rule (DWSPR) outlining the general requirements to protect wellheads from outside surface contamination. Requirements of the DWSPR include preparing a Drinking Water Source Protection Plan for each groundwater source in all public water systems. Proof of ownership, and maintenance of all land in and around wellheads where surface water contamination can occur, is also required.

Through the 1996 Reauthorized Safe Drinking Water Act (SDWA), the Drinking Water Board is receiving funding to establish a Drinking Water State Revolving Fund (SRF). The purpose of the fund is to ensure all drinking water systems within the state are capable of maintaining and protecting the supply of drinking water at an affordable cost. The Drinking Water Board expects to receive grants, a portion of which will go into the SRF for project construction. The amounts for project construction are: \$9.76 million in 1998, \$6.0 million in 1999, \$6.5 million in 2000, and between \$6.0 million and \$6.5 million each year through 2003. The state is expected to provide an additional 20 percent of each appropriation, or a total \$9.8 million, as matching cost-share funds. The Drinking Water Board will have another portion of the grants available for regional water system planning.

The EPA must publish a maximum contaminant level goal (MCLG) and promulgate a National Primary Drinking Water Regulation (NPDWR) for contaminants that: 1) may have adverse effects on human health, 2) are known or are likely to occur in public water systems at a frequency and concentration of significance to public health, and 3) whose regulation offers a meaningful opportunity to

reduce health risk for people served by public water systems.

The EPA must issue regulations establishing criteria for a monitoring program for unregulated contaminants. The regulations specify that only a representative sample of systems serving 10,000 or fewer people are monitored. By August 6, 1999, and every five years thereafter, the EPA must issue a list of no more than 30 unregulated contaminants to be monitored by public water systems and included in the occurrence database.

A new program is established authorizing the EPA to provide grants to states for the development and implementation of state programs to ensure the coordinated and comprehensive protection of groundwater resources within the state.

11.4 Drinking Water Problems

Demand for high quality water and the potential for contamination of supplies has increased along with population growth. Natural geologic conditions, as well as human activities such as agriculture, mining, construction and hazardous waste spills, all contribute to drinking water problems. Contamination also comes from watershed and alluvial fan recharge areas where polluted recharge waters enter underground drinking water aquifers.

11.4.1 Operation of Facilities

Water quality in the upper reaches of the basin is good to excellent. Occasional repair, replacement, enlargement or upgrading of each system is required to maintain adequate levels of service. Investments in wells, storage tanks, treatment plants and pipelines can be expected in the future.

11.4.2 Groundwater Contamination

Most groundwater is acceptable for use in municipal, industrial and agricultural operations with only a few restrictions in isolated areas of poorer quality. Industries such as the phosphate mining, oil and gas production, and gilsonite mining use well and spring water in their operations.

11.5 Culinary Water Use and Projected Demands⁵⁷

Population projections are presented in Section 4 and are used to forecast M&I water needs. Most public water suppliers expect an increased demand throughout the projection period to the year 2020. Water use and projected demands on major public drinking water systems, including most commercial and some industrial uses, are shown in Table 11-2.

Table 11-2 Current Projected Culinary Water Diversions For Major Public Water Systems			
Location of Use (County)	1995	2020	2050
	(acre-feet/year)		
Daggett	510	790	1,220
Duchesne	2,820	3,800	5,120
Uintah	6,270	8,920	12,690
Totals	9,600	13,510	19,030

These culinary M&I water projections do not include effects of demographic changes in persons per household or water conservation measures. If the projected downward trend in persons per household continues, it will increase the projected water use per person about 4 percent by the year 2050. This occurs because some water uses, especially outdoor lawn and garden irrigation, remain constant as household size is reduced. Water conservation is discussed in Section 17.

11.5.1 Water Treatment

Federal regulations and state rules require that surface water supply for culinary use has multiple barriers against waterborne disease transmission. The most common treatment is a dual-barrier process of water filtration and subsequent chemical disinfection with chlorine. Well and spring waters require no treatment when free of surface water influence, but many water systems nevertheless implement disinfection as a precaution. All surface water delivered for culinary use is treated. Well water requires no treatment in most cases. Spring water is usually chlorinated. Table 11-3 lists the treatment methods in this basin. Where applicable, maximum system hydraulic capacities are also

indicated. Figure 11-3 shows the location of culinary treatment facilities.

11.5.2 Water Supply and Use

As of 1995, culinary treatment and distribution systems provide drinking water to about 35,800 people in the basin. The balance of the population is served by several or single-family domestic systems.

Table 11-4 shows the population served, total connections and use, and per capita use rates. Total culinary water use is expected to increase from about 9,600 acre-feet in 1995 to 19,030 acre-feet by 2050. Culinary water supply wells and springs are shown in Figure 11-4.

Monthly water rates in the Uintah Basin range from \$12 per 10,000 gallons in Vernal to \$35 in East Duchesne. Water rates for selected communities are shown in Section 17.

11.6 Issues and Recommendations

Drinking water issues revolve around water quality and the protection from contamination by untreated wastewater and treated wastewater effluent, and by poor land use practices of streams, reservoirs and groundwater aquifers. These issues are discussed in other sections of the *State Water Plan*. Section 12 deals with water quality in streams and reservoirs and Section 19 addresses groundwater issues. □

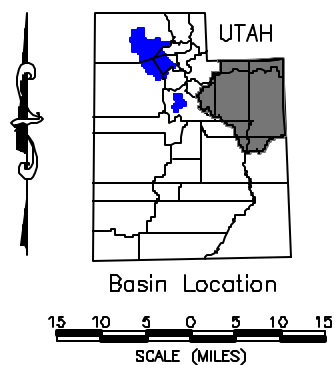
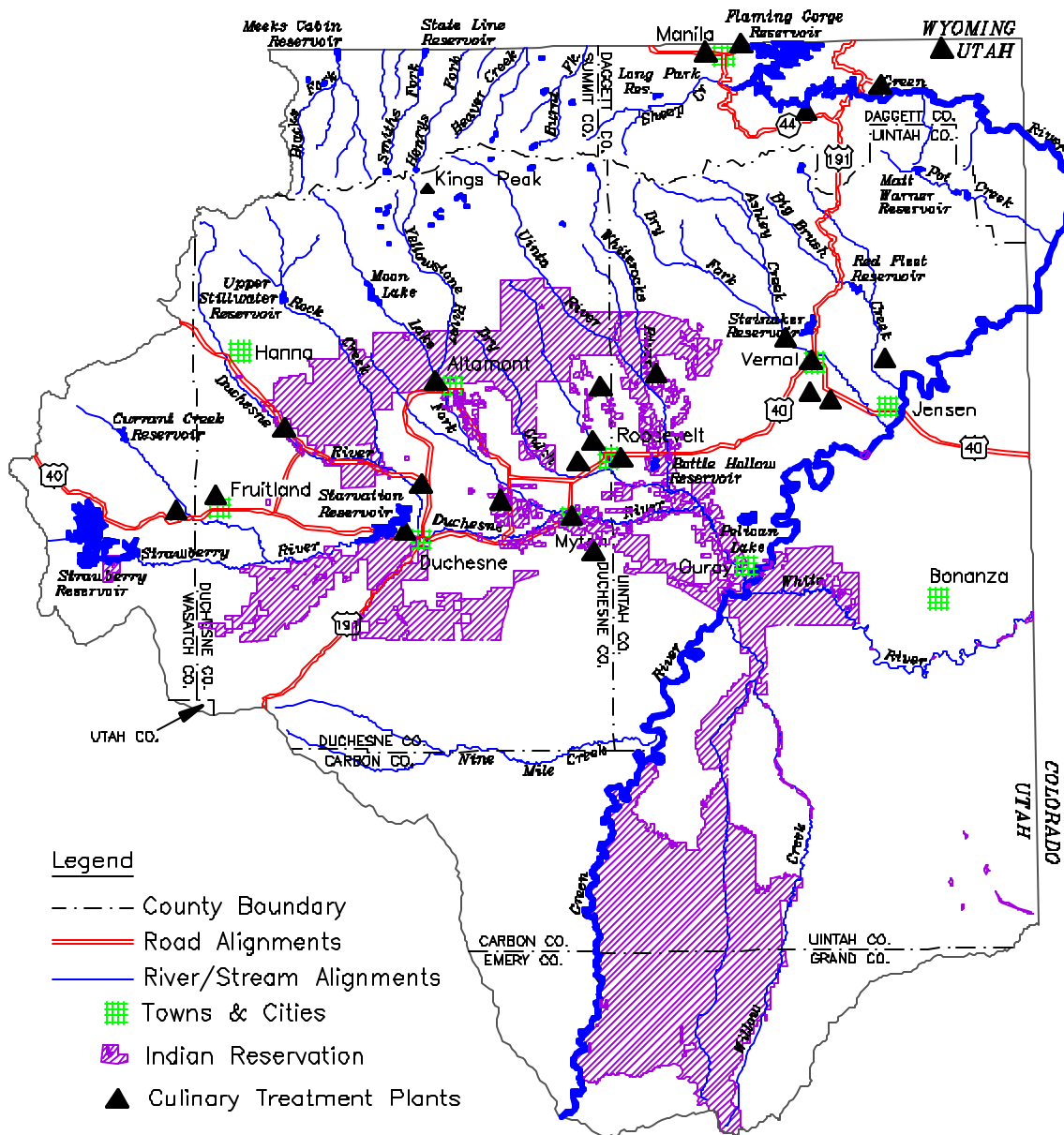
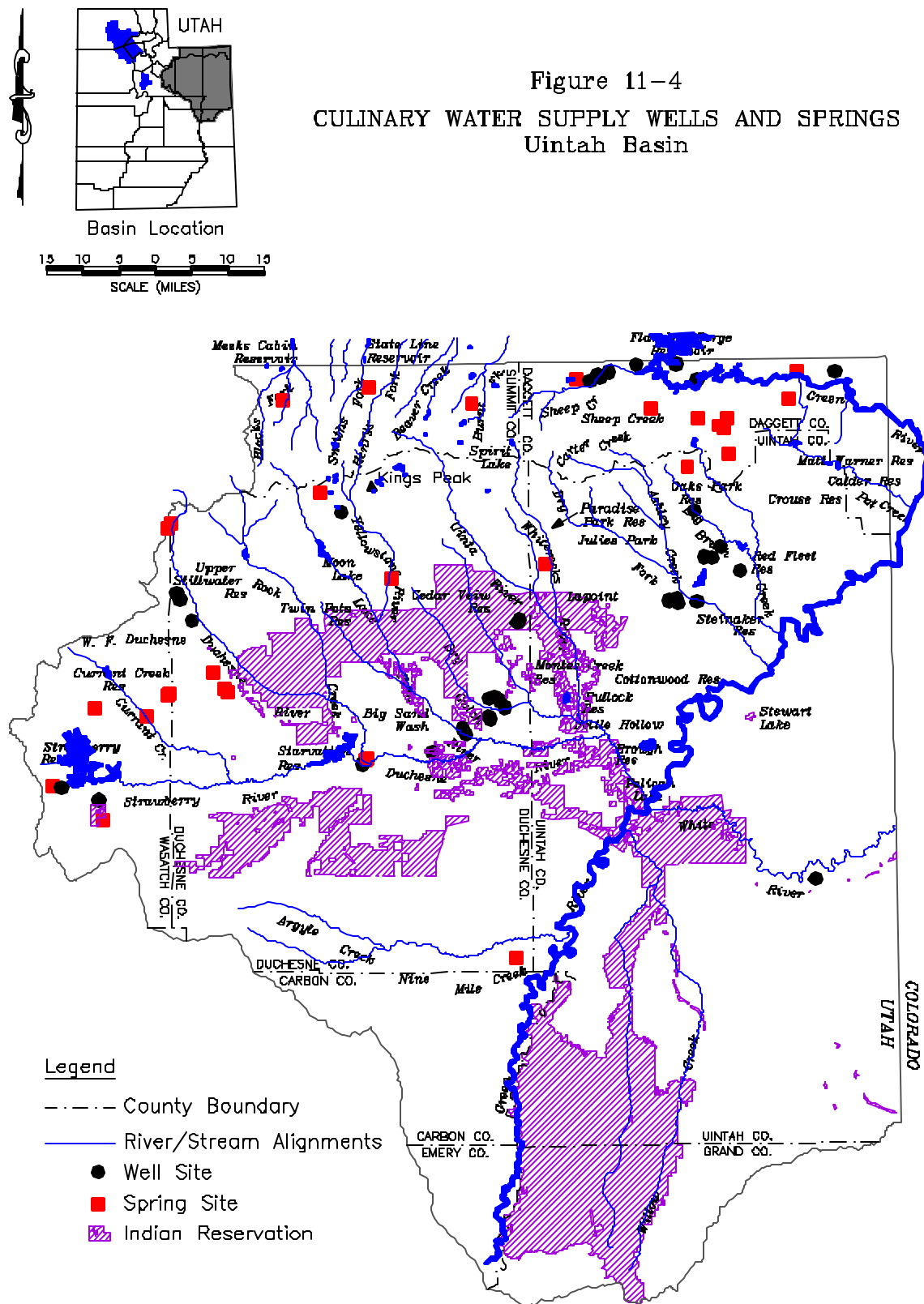


Figure 11-3
CULINARY WATER TREATMENT PLANTS
Uintah Basin





**Table 11-3
Water Treatment Facilities**

Facility Name	Treatment Method	Source	Max. Ac-ft/yr
Daggett County			
Dutch John (Bureau of Reclamation)	F/C	Surface	677
Daggett County Water & Sewer	C	Springs(1)/Wells(1)	121
Greendale Water Company	C	Springs(2)	116
Manila Municipal Water System	F/C,P/C	Springs(2)/Wells(4)/Surface	652
Clay Basin Camp(Questar Pipeline Co.)	C, F/C	Springs(2)/Wells(4)/Surface	6
Daggett County Total			1,572
Duchesne County			
Johnson Water District	None	Wells(1)	1,290
Duchesne County Upper County W.C.D.	C	Springs(2)	3
Fruitland Water Special Service District	C	Springs(2)	68
Roosevelt Municipal Water System	C	Wells(5)	
Roosevelt Municipal Water System			7,147
Neola Water District			130
Tabiona Water System	C	Springs(2)	194
Valley Park Trailer Court	C	Wells(1)	565
Fruitland Homeowners	C	Well(1)	1
Central Utah W.C.D. - Duchesne (4 mgd, 4481 ac-ft/yr)	F/C	Surface	
Duchesne County Water System			210
Myton Municipal Water System			87
Johnson Water District			816
East Duchesne Improvement District			181
Reserve Capacity			3,187
Duchesne County Total			12,584
Uintah County			
Ashley Valley Water & SID (8 mgd, 8962 ac-ft/yr)			
Ashley Valley Water & SID	F/C	Surface	1,864
Maeser Water Improvement District			590
Jensen Water Improvement District			250
Reserve Capacity			6,258
Central Utah W.C.D. - Ashley Filtration Plant (15 mgd)	F/C	Surface	
Vernal City Municipal Water			2,800
Uintah W.C.D. (Wholesale to Ashley Valley)			30
Reserve Capacity			10,836
Tridell-Lapoint Water Improvement District	F/C	Surface	1,145
Ute Indian Tribe	C	Springs(1)/Wells(1)	
Ute Indian Tribe			2,398
Ouray Park Water Improvement District			42
Johnson Water District (Duchesne County)			20
Uintah County Total			26,233
Treatment Method: C=Chlorination, F/C=Filtration & Chlorination			
Source: Utah Division of Drinking Water			

Table 11-4 Public Community Systems Culinary Water Supply and Use - 1995				
Location of Use (County)	Population Served	Total Connections	Total M&I Water ^{a,d} Use (ac-ft)	Per Capita ^b Use (gpcd)
Daggett	1,240 ^c	830 ^c	510	366
Duchesne	11,280	3,930	2,820	223
Uintah	23,260	7,670	6,270	240
Totals	35,780	12,430	9,600	240 ^e
^a Includes residential, commercial, institutional and industrial culinary uses. ^b From Table 11-5 Division of Water Resources M&I Study (March 1997). ^c High due to summer tourists, tourist homes and trailers. ^d Does not include self-supplied industries. ^e Average.				